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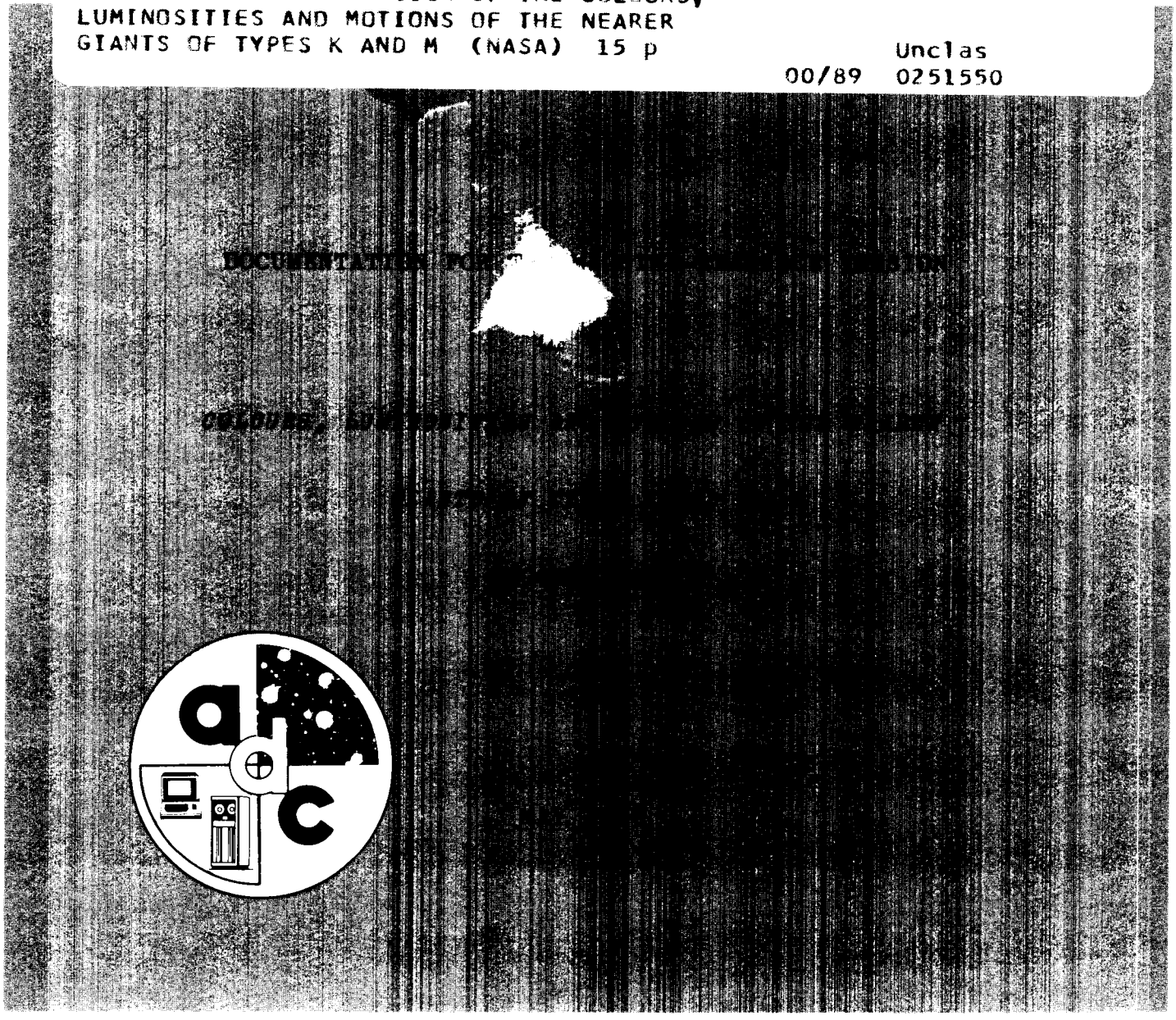

NSSDC/WDC-A-R&S 86-08

DOCUMENTATION FOR THE MACHINE-READABLE VERSION

OF THE

COLOURS, LUMINOSITIES AND MOTIONS OF THE NEARER GIANTS OF TYPES K AND M

(EGGEN 1966)

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National Space Science Data Center (NSSDC)/
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ABSTRACT

The machine-readable version of the catalog, as it is currently being distributed by the Astronomical Data Center, is described. This catalog is a compilation of *UBV* photometry, absolute visual magnitudes, and space velocities for 1012 stars in the *Yale Catalogue of Bright Stars* (1964) that have been observed to have $B-V$ redder than +0.8 mag. The compilation is stated to be complete, with the exception of a few K-type dwarfs, for stars brighter than visual magnitude 5.5, but some fainter objects are included.

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SECTION 1 - INTRODUCTION AND SOURCE REFERENCE

The data compilation *Colours, Luminosities and Motions of the nearer Giants of types of K and M* (Eggen 1966) contains all stars in the *Yale Catalogue of Bright Stars* (Hoffleit 1964) that have visual magnitudes brighter than 5.5 and that have been observed to have $B-V$ redder than +0.8 mag, with the exception of a few K-type dwarfs. In addition to mostly K- and M-type giants, a few subgiants and supergiants are included. The data result from some 1600 photoelectric observations of 600 stars with the 50.8-cm reflector of the Hale Observatories. Approximately one-third of the stars had been observed at the Cape Observatory (Cousins and Stoy 1963). Although spectral types are given in the published catalog, they were taken from a variety of sources, are very inhomogeneous, and are not included in the machine version.

This document describes the machine-readable version of the compilation as it is currently being distributed from the Astronomical Data Center. It is intended to enable users to read and process the data without problems and guesswork. For additional details concerning the observations and their analysis, the source reference should be consulted. A copy of this document should be transmitted to any recipient of the machine-readable compilation originating from the Astronomical Data Center.

SOURCE REFERENCE

Eggen, O. J. 1966, *Roy. Obs. Bull.*, No. 125.

SECTION 2 - TAPE CONTENTS

A byte-by-byte description of the contents of the machine-readable compilation *Colours, Luminosities and Motions of the nearer Giants of types K and M* is given in Table 1. A suggested Fortran format specification for reading each data field is included and can be modified depending upon individual programming requirements (Fortran 77 character string-type formats are used); however, caution is advised when substituting format specifications, since some data fields contain character data and others are blank when data are absent. Particular care is required for the photometric data (magnitudes and color indices) and the space velocities, where valid zero values can exist, but where fields are blank for nonexistent data and where precision may vary within the same field. It is safest to buffer in records in an unformatted mode or read them with character (A) formats and test for blank data fields before processing with numerical formats for calculations and/or search purposes. For such fields, primary numerical format specifications are given to indicate decimal-point locations, while alternate A-type formats are specified in parentheses. Default (null) values are always blanks in data fields for which primary suggested formats are given as A.

Table 1. Tape Contents. *Colours, Luminosities and Motions of the nearer Giants of types K and M.*

Byte(s)	Units	Suggested Format	Default Value	Remarks
1- 4	---	I4	---	HR number from the *Yale Catalogue of Bright Stars* (Hoffleit 1964).
5- 6	---	A2	---	A slash (/) and additional digit if a second HR star is included in the measurements.
7	---	A1	---	An asterisk (*) is present if there are remarks in the published catalog.
8	---	1X	---	Blank
9-13	---	I5	---	GCRV number in the *General Catalogue of Stellar Radial Velocities* (Wilson 1953).
14-15	---	A2	---	A slash and additional digit if a GCRV star is included in the value given.
16-18	---	3X	---	Blank

Table 1 (continued)

Byte(s)	Units	Suggested Format	Default Value	Remarks
19-23	mag	F5.1 (A5)	blank	Photoelectric V_E magnitude. The precision varies within the data field.
24	---	A1	---	A "v" if the magnitude is variable; a colon (:) for uncertainty. If the magnitude given is considered to be a maximum, a code M is given in byte 46.
25-26	---	2X	---	Blank
27-31	mag	F5.2 (A5)	blank	$B-V$ color. The precision varies.
32	---	A1	---	$B-V$ uncertainty flag: colon (:) for uncertainly, "V" for variable.
33-34	---	2X	---	Blank
35-39	mag	F5.2 (A5)	blank	$U-B$ color. The precision varies.
40	---	A1	---	$U-B$ flag (see byte 32). A question mark (?) is present if the value is surrounded by parentheses in the published table.
41-43	---	3X	---	Blank
44-45	---	I2 (A2)	blank	Number of observations, n, for UBV data.
46	---	A1	---	Code for UBV measurements: C observed at the Cape Observatory (Cousins and Stoy 1963) H observed with the 100" telescope (no number of observations given) M variable magnitude reported is considered to be a maximum value for the variable star
47	---	1X	---	Blank

Table 1 (continued)

Byte(s)	Units	Suggested Format	Default Value	Remarks
48-51	mag	F4.1 (A4)	blank	Absolute visual magnitude, M_V, taken from various sources, as indicated by the codes in bytes 53-54. Precision varies.
52	---	A1	---	Flag for M_V: : M_V uncertain ? M_V very uncertain No source is given for very uncertain values, nor for many of the other values quoted (53-54 blank).
53-54	---	A2	---	Source of M_V, as denoted by the following codes: Cp available photometry of common proper-motion companion used to obtain distance moduli and luminosities H luminosity derived from probable membership in the Hyades group Tr not defined in source reference W Calibration of $M_V(W)$ used to derive M_V (see page E152 of source reference * values obtained by Gyldenkerne (1964) from photoelectrically determined luminosity parameters The source is not defined in the absence of a code.
55-57	---	3X	---	Blank
58-61	km s^{-1}	I4 (A4)	blank	U component of the space velocity relative to Sun.
62	---	A1	---	Colon if U uncertain.

Table 1 (concluded)

Byte(s)	Units	Suggested Format	Default Value	Remarks
63-66	km s^{-1}	I4 (A4)	blank	V component of the space velocity relative to Sun.
67	---	A1	---	Colon (:) if V uncertain.
68-71	km s^{-1}	I4 (A4)	blank	W component of the space velocity relative to Sun.
72	---	A1	---	Colon (:) if W uncertain.

SECTION 3 - TAPE CHARACTERISTICS

The information contained in Table 2 is sufficient for a user to describe the indigenous characteristics of the data file to a computer. Not included is information easily varied from installation to installation, such as block size (physical record length), blocking factor (number of logical records per physical record), total number of blocks, tape density, number of tracks, and internal coding (EBCDIC, ASCII, etc.). These parameters should always be transmitted if secondary copies of the catalog are supplied to other users or installations.

Table 2. Tape Characteristics. *Colours, Luminosities and Motions of the nearer Giants of types K and M.*

NUMBER OF FILES	1
LOGICAL RECORD LENGTH	72
RECORD FORMAT	FB*
TOTAL NUMBER OF LOGICAL RECORDS	1012

* Fixed block length (last block may be short)

SECTION 4 - REMARKS, MODIFICATIONS AND REFERENCES

The data compilation *Colours, Luminosities and Motions of the nearer Giants of types K and M* was received on magnetic tape from the Centre de Données Astronomique, Strasbourg (CDS) on 9 July 1980. Text records at the beginning of the original file indicated that the data were punched in 1972 November at the Kanazawa Institute of Technology. The following modifications were made to the data file to standardize the format, to make the data easier to machine process (e.g., to separate character and numerical data fields) and to effect closer agreement between the published table and the machine format.

1. A catalog number "5005A74" assigned by the CDS was removed from the beginning of each record. Thirty-two text records containing a column (not byte) description and possible format for reading the data were removed entirely from the file, since their presence would have made the file more complicated to machine process and not sortable.

2. The remarks flag (byte 7) was moved from byte 5 so that it always occurs in the same position. This was previously not the case because of the data in bytes 5-6.

3. Decimal points were added to all V_E, $B-V$, $U-B$ and M_V data, the variability indicator "V" for V_E was changed to lower case "v", and plus signs were added to all positive values of $B-V$, $U-B$, M_V, U, V, and W.

4. The code "C" for number of observations was moved from byte 45 to byte 46 (to remove it from the numerical field) and the codes "H" and "M" for 100" and "max." occurring in the published table, were added.

5. The question mark for M_V was moved from one of the sources bytes (53) to byte 52 to isolate it from the sources codes. The M_V source codes CP and TR were changed to Cp and Tr, respectively, to agree with the published table.

6. The last five stars (HR 9066-9089) were missing from the file — these were added.

A few errors were found in the data during the course of this work and have been corrected, but the machine version has not been proofread. Therefore, if unusual values are found in the machine version, they should be checked against the published table before any interpretation is made.

REFERENCES

Cousins, A. W. J. and Stoy, R. H. 1963, unpublished.

Eggen, O. J. 1966, *Roy. Obs. Bull.* No. 125.

Gyldenkerne, K. 1964, *Mat. Fys. Skr. Dan. Vid. Selsk.* 2, No. 9.

REFERENCES (concluded)

Hoffleit, D. 1964, *Yale Catalogue of Bright Stars*, 3rd edition (New Haven: Yale University Observatory).

Wilson, R. E. 1953, *General Catalogue of Stellar Radial Velocities*, Carnegie Inst. of Washington Publ. 601 (Washington: Carnegie Institution).

SECTION 5 - SAMPLE LISTING

The sample listing given on the following pages contains logical data records exactly as they are recorded on the tape. Sample records for stars at the beginning and end of the data file are listed. The beginning of each record and bytes within the record are indicated by the column heading index across the top of each page (digits read vertically).

L I S T I N G O F R E C O R D S F R O M T A P E F I L E

TAPE FILE NAME: Lum.,Motions K, M Giants

RECORDS 1 TO 20

TAPE FILE 25

RECORD LENGTH 72 BYTES

INPUT VOLSER ADC005

```
C O L U M N                                                                                                                        111111111111111
H E A D I N G             111111111122222222223333333333444444444455555555556666666666777777777788888888889999999999000000000011111
I N D E X        123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345
```

RECORD	1	3	*	36	4.56	+1.06	+0.86	2	+2.1		+ 5	+ 9	+ 11
RECORD	2	25		75	3.87	+1.03	+0.85	C	+1.5		+ 8	- 27	+ 11
RECORD	3	30	*	82	5.27	+1.05	+0.93	C	+0.5		- 14	- 11	0
RECORD	4	37		100	5.27	+1.47	+1.64	3	+0.5	W	+ 12	- 22	+ 3
RECORD	5	45		122	4.80	+1.58	+1.92	5	-0.5	*	+ 31	- 54	+ 25
RECORD	6	46	*	120	5.0 v	+1.56	+1.83	5	-0.9	H	+ 36	- 17	- 3
RECORD	7	48		123	4.32	+1.61	+1.95	3	-1.4		- 29	- 34	+ 18
RECORD	8	74	*	177	3.44	+1.16	+1.21	2	-0.5	*	- 6	0	- 20
RECORD	9	84		198	5.17	+1.00		C	+0.6		- 3	- 30	- 22
RECORD	10	85	*	200	5.0				-1.0		+ 36	- 27	- 35
RECORD	11	99	*	237	2.38	+1.09	+0.89	C	+1.0	Tr	- 16	- 73	- 61
RECORD	12	103	*	250	4.7 v	+1.66	+1.88	11	-0.1	*	+ 47	- 17	- 3
RECORD	13	105		251	4.80	+1.65	+1.80	C	-1.0		- 26	- 22	- 8
RECORD	14	109		256	5.42	+1.57		C	-0.4		+ 70	- 80	- 35
RECORD	15	152		335	5.08	+1.57	+1.84	3	-0.6	W	- 26	- 14	+ 30
RECORD	16	163		350	4.31	+0.88	+0.48	2	+1.6	*	- 79	- 60	+ 13
RECORD	17	165	*	357	3.22	+1.26	+1.51	3	+0.2	*	+ 14	- 26	- 12
RECORD	18	168	*	364	2.20	+1.16	+1.14	3	-1.0	*	+ 6	- 9	- 6
RECORD	19	175		374	5.33	+0.88	+0.59	5	+1.3	*	- 6	- 2	0
RECORD	20	180		378	4.58	+0.97	+0.73	C	+0.9		- 6	- 3	- 15

L I S T I N G   O F   R E C O R D S   F R O M   T A P E   F I L E

TAPE FILE NAME: Lum.,Motions K, M Giants

RECORDS 993 TO 1012

TAPE FILE 25

RECORD LENGTH 72 BYTES

INPUT VOLSER ADC005

```
C O L U M N                                                                                                          111111111111111
H E A D I N G          111111111122222222223333333333444444444455555555556666666666777777777788888888889999999999000000000011111
I N D E X     123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345
```

RECORD	993	8916		14720	4.32	+1.07	+0.98	2	+0.8 ⁎	- 30	+	7	-	1
RECORD	994	8923		14727	4.59	+0.91	+0.82	2	+1.3 ⁎⁎	+ 14	-	11	+	11
RECORD	995	8930		14746	5.20	+1.02	+0.88	2	+1.1 ⁎	+ 52	-	93	-	29
RECORD	996	8943	⁎	14780	4.95	+1.42	+1.65	1	-1.1	+ 25	-	38	-	8
RECORD	997	8961	⁎	14808	3.88	+1.02	+0.68	4	+1.3 ⁎	0	-	12	-	70
RECORD	998	8974		14826	3.22	+1.02	+0.92	5	+2.2 Tr	- 23	-	38	+	1
RECORD	999	8975		14836	5.30	+0.97		C	+2.0	- 25	-	3	-	8
RECORD	1000	8991		14859	5.08	+1.69	+2.05	4	-1.0 W	+ 8	-	7	+	31
RECORD	1001	8997	⁎	14864	4.96	+0.94	+0.61	1	+0.7 W	+ 23	-	10	+	7
RECORD	1002	9003		14879	5.00	+1.09	+0.80	2	-3.0					
RECORD	1003	9004	⁎	14882	4.9 v	+2.5 :	+3.3 :	C	-3.0	- 75	-	6	+	6
RECORD	1004	9008		14891	4.87	+1.12	+1.01	3	+1.1 W	+ 8	-	27	+	12
RECORD	1005	9032	⁎	14930	5.10	+0.92	+0.60	C	+1.0	- 16	-	8	-	2
RECORD	1006	9036		14939	5.07	+1.56	+1.88	3	-1.0 W	- 18	-	18	-	13
RECORD	1007	9064		14992	4.66	+1.58	+1.72	4	-1.3 ⁎	- 35	-	2	-	10
RECORD	1008	9066	⁎	14998	4.8			M	-1.6	+ 73	-	9	+	4
RECORD	1009	9067	⁎	14999	4.85	+0.92	+0.70	C	+0.7 W	- 28	-	14	-	7
RECORD	1010	9069	⁎	15003	5.1				+0.1	+ 42	+	14	-	18
RECORD	1011	9084		15035	4.77	+1.27	+1.41	C	+0.2	- 39	-	50	+	40
RECORD	1012	9089		15043	4.3 v	+1.60	+1.80:	2	-1.0	+ 16	-	34	-	2